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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,704	08/25/2003	Kenichiro Nakamura	0505-1227P	9815
2292 7590 06/11/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER PILKINGTON, JAMES				
ART UNIT 3682		PAPER NUMBER		
NOTIFICATION DATE 06/11/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/646,704

**Applicant(s)**

NAKAMURA ET AL.

**Examiner**

JAMES PILKINGTON

**Art Unit**

3682

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 8-10, 16-20, 22-25, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-10, 16-20, 22-25, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 17-20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "the wave washer" in line 13. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

3. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsergas, US PGPub 2004/0031343, in view of Yeh, US PGPub 2002/0124673.

Re claims 23 and 24, Tsergas discloses a gear transmission device comprising:

- A pair of first (134B) and second fixed walls (111B), said first and second fixed walls opposing each other with respect to an axial direction of a first gear shaft (128)
- A first gear (122) positioned on said first gear shaft (128) between the first and second fixed walls (134B and 111B), said gear being axially movable with respect to said first and second fixed walls
- A second shaft (126) having a relatively large diameter gear (136) on a first end and a relatively smaller diameter gear (121) on a second end,

with a space (see Figure 2A) separating the relatively larger diameter gear (136) and the relatively small diameter gear (121)

- Wherein said small diameter gear (121) operatively engages said first gear (122)
- A large diameter ring gear (140) operatively engaged with said first gear (122, operatively engaged via gears on shaft 126)

Tsergas does not disclose that the first gear has a cylindrical portion formed on one side thereof and regulating means comprising an elastic member having first and second surfaces, the elastic member being disposed directly around the first gear shaft with the first side thereof directly facing the fixed gear, a plane washer disposed directly around the first gear shaft, the plane washer having a first side with an inner surface portion directly facing a second surface of the elastic member, an outer surface portion disposed radially outward with respect to the inner surface portion and directly facing end of the cylinder portion, wherein the regulating means is adapted to regulate an increase of a bending amount of the elastic member by a predetermined value and when the elastic member is in a compressed state, only the outer surface portion is able to contact the ends of the cylinder portion.

Yeh teaches a gear (3) having a cylindrical portion (4, created by groove (42) formed on one side thereof and regulating means comprising an elastic member (5) having first and second surfaces (end in the gear and end on the washer), the elastic member being disposed directly around the first gear shaft (11) with the first side thereof directly facing the fixed gear (3), a plane washer (7) disposed directly around the

first gear shaft (11), the plane washer (7) having a first side with an inner surface portion directly facing a second surface (end contacting plane washer) of the elastic member (5), an outer surface portion (outside of spring 5) disposed radially outward with respect to the inner surface portion and directly facing the end of the cylinder portion (4), wherein the regulating means is adapted to regulate an increase of a bending amount of the elastic member by a predetermined value (comes in contact with the plane washer to regulate) and when the elastic member is in a compressed state, only the outer surface portion is able to contact the ends of the cylinder portion (when compressed the spring expands radially therefore only the outer surface of the spring will contact the cylindrical portion) for the purpose of providing an impact absorbing device in a gear transmission system (paragraph 0004).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Tsergas and provide a cylindrical portion formed on one side of the gear and regulating means comprising an elastic member having first and second surfaces, the elastic member being disposed directly around the first gear shaft with the first side thereof directly facing the fixed gear, a plane washer disposed directly around the first gear shaft, the plane washer having a first side with an inner surface portion directly facing a second surface of the elastic member, an outer surface portion disposed radially outward with respect to the inner surface portion and directly facing end of the cylinder portion, wherein the regulating means is adapted to regulate an increase of a bending amount of the elastic member by a predetermined value and when the elastic member is in a compressed state, only the outer surface portion is able

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to contact the ends of the cylinder portion, as taught by Yeh, for the purpose of providing an impact absorbing device in a gear transmission system.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 8, 9, 10, 16-20, 22, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsergas, US PGPub 2004/0031343, in view of Yeh, US PGPub 2002/0124673 (cited in first office action), and further in view of Overhues, USP 5,112,179.

Re clms 1-3, 8, 9 and 10, Tsergas discloses a gear transmission device comprising:

- A pair of first (134B) and second fixed walls (111B), said first and second fixed walls opposing each other with respect to an axial direction of a first gear shaft (128)
- A first gear (122) positioned on said first gear shaft (128) between the first and second fixed walls (134B and 111B), said gear being axially movable with respect to said first and second fixed walls
- A second shaft (126) having a relatively large diameter gear (136) on a first end and a relatively smaller diameter gear (121) on a second end,

with a space (see Figure 2A) separating the relatively larger diameter gear (136) and the relatively small diameter gear (121)

- Wherein said small diameter gear (121) operatively engages said first gear (122)
- A large diameter ring gear (140) operatively engaged with said first gear (122, operatively engaged via gears on shaft 126)

Tsergas does not disclose regulating means positioned between the first gear and the second fixed wall wherein the regulating means includes: a plane washer having one face positioned against a planar surface on an end face of the second fixed wall, a cylindrical portion being formed on a first opposed end face of the first gear, an elastic member positioned between the cylindrical portion and the plane washer, a predetermined space formed between the cylindrical portion and the plane washer, and wherein the cylindrical portion is capable of operative contact with said planar end surface of said end wall through direct contact with the plane washer.

Yeh teaches regulating means positioned between a first gear (3) and a fixed wall (9 and end portion of 8, see Figure 3) wherein the regulating means includes: a plane washer (7) having one face positioned against a planar surface (end portion of 8) on an end face of the second fixed wall (9), a cylindrical portion (formed by groove 42) being formed on a first opposed end face of the first gear (3), an elastic member (5) positioned between the cylindrical portion (outer ring formed by groove 42) and the plane washer (7), a predetermined space (between 7 and end face of 4) formed between the cylindrical portion and the plane washer, and wherein the cylindrical portion

is capable of operative contact with said planar end surface of said end wall through direct contact with the plane washer (upon compression) for the purpose of providing an impact absorbing device in a gear transmission system (paragraph 0004).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Tsergas and provide regulating means positioned between the first gear and the second fixed wall wherein the regulating means includes: a plane washer having one face positioned against a planar surface on an end face of the second fixed wall, a cylindrical portion being formed on a first opposed end face of the first gear, an elastic member positioned between the cylindrical portion and the plane washer, a predetermined space formed between the cylindrical portion and the plane washer and wherein the cylindrical portion is capable of operative contact with said planar end surface of said end wall through direct contact with the plane washer, as taught by Yeh, for the purpose of providing an impact absorbing device in a gear transmission system.

Tsergas in view of Yeh as applied above does not disclose that the elastic member is a deformable closed ring, wherein an outer perimeter of the elastic member has a circular shape when viewed in plan view, and an inner perimeter of the elastic member has a non-circular shaped when viewed in plan view and wherein at least a portion of an inner perimeter fits directly around an outer circumference of the shaft.

Overhues teaches an elastic member (spring/wave washer) that is a deformable closed ring in the form of a wave washer, and wherein an outer perimeter of the elastic



member has a circular shape (1) when viewed in plan view (see Figures 7a and 7b), and an inner perimeter of the elastic member has a non-circular shape (at 4) when viewed in plan view, at least a portion of the inner perimeter (4) of the washer fits directly around the outer circumference of the shaft (2, Figures 7a and 7b).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsergas in view of Yeh with an elastic member that is a deformable closed ring that is in the form of a wave washer, and wherein an outer perimeter of the elastic member has a circular shape when viewed in plan view, and an inner perimeter of the elastic member has a non-circular shape when viewed in plan view, at least a portion of the inner perimeter of the washer fitting directly around the outer circumference of the shaft since substituting one elastic member for another (spring of Yeh with spring/wave washer of Overhues) would achieve predictable results of removing vibration from the system well simplifying the gear structure required with a spring (i.e. no bore is required in the gear to hold the spring) thus reducing manufacturing/assembly time and cost.

Re clm 16, Tsergas in view of Yeh and Overhues discloses that the plane washer (7) is disposed in a position opposite said cylindrical portion (as disclosed by Yeh above).

Re clms 17-20 and 22, as best understood, Tsergas discloses a gear transmission device comprising:

- A pair of first (134B) and second fixed walls (111B), said first and second fixed walls opposing each other with respect to an axial direction of a first gear shaft (128)
- A first gear (122) positioned on said first gear shaft (128) between the first and second fixed walls (134B and 111B), said gear being axially movable with respect to said first and second fixed walls
- A second shaft (126) having a relatively large diameter gear (136) on a first end and a relatively smaller diameter gear (121) on a second end, with a space (see Figure 2A) separating the relatively larger diameter gear (136) and the relatively small diameter gear (121)
- Wherein said small diameter gear (121) operatively engages said first gear (122)
- A large diameter ring gear (140) operatively engaged with said first gear (122, operatively engaged via gears on shaft 126)

Tsergas does not disclose regulating means comprising an elastic member positioned between said first gear and said second fixed wall, a single cylindrical portion being formed on a first opposed end face of the first gear, the cylindrical portion facing in a direction toward a planar surface on the end face of the second fixed wall, wherein the elastic member is surrounded by said cylindrical portion and wherein the regulating means includes a plane washer disposed in a position opposite to said cylindrical portion.

Yeh teaches regulating means comprising an elastic member (5) positioned between a first gear (3) and a fixed wall (9 and end portion of 8, see Figure 3), a single cylindrical portion (outer ring formed by groove 42) being formed on a first opposed end face of the first gear (3), the cylindrical portion facing in a direction toward a planar (end portion of 8) surface of the fixed wall, wherein the elastic member (5) is surrounded by said cylindrical portion (see Figure 3) and wherein the regulating means includes a plane washer (7) disposed in a position opposite the cylindrical portion for the purpose of providing an impact absorbing device in a gear transmission system (paragraph 0004).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Tsergas and provide regulating means comprising an elastic member positioned between said first gear and said second fixed wall, a single cylindrical portion being formed on a first opposed end face of the first gear, the cylindrical portion facing in a direction toward a planar surface on the end face of the second fixed wall, wherein the elastic member is surrounded by said cylindrical portion and wherein the regulating means includes a plane washer disposed in a position opposite to said cylindrical portion, as taught by Yeh, for the purpose of providing an impact absorbing device in a gear transmission system.

Tsergas in view of Yeh as applied above does not disclose that the elastic member is a deformable closed ring wave washer, wherein at least a portion of an inner perimeter fits directly around an outer circumference of the shaft and wherein an outer

perimeter of the elastic member is substantially equal to an inner diameter of the cylindrical portion

Overhues teaches an elastic member (spring/wave washer) that is a deformable closed ring in the form of a wave washer, wherein at least a portion of an inner perimeter (4) fits directly around an outer circumference of the shaft (2) and wherein an outer perimeter of the elastic member is substantially equal to an inner diameter of the cylindrical portion (when combined the elastic member of Overhues would need to be sized in such a manner do as to fit the gear and shaft).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsergas in view of Yeh with an elastic member that is a deformable closed ring that is in the form of a wave washer, wherein at least a portion of an inner perimeter (4) fits directly around an outer circumference of the shaft (2) and wherein an outer perimeter of the elastic member is substantially equal to an inner diameter of the cylindrical portion since substituting one elastic member for another (spring of Yeh with spring/wave washer of Overhues) would achieve predictable results of removing vibration from the system well simplifying the gear structure required with a spring (i.e. a bore that constrains the spring and prevents the spring from sliding to a different radial distance from the shaft is no longer required) thus reducing manufacturing/assembly time and cost.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsergas '343 in view of Yeh '673 and Overhues '178.

Tsergas in view of Yeh discloses all of the claimed subject matter as described above. Yeh further discloses that the end face of the fixed wall (9) is smaller than the cylindrical portion (formed by groove 43, end of 4, see Figure 2) formed on the first gear (3).

Tsergas in view of Yeh does not disclose that the one face of the plane washer is larger than the end face of the second fixed wall.

It would have been an obvious matter of design choice to make the one face of the plane washer larger than the end face of the fixed wall, since such a modification would have involved a mere change in size of a component. A change in sized is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-3, 8-10, 16-20, 22, 25, 27 and 28 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed 4/28/08 with respect to claim 23 have been fully considered but they are not persuasive.

The Applicant argues that because Yeh a coil spring fitting in a groove and a plane washer contacting the gear on both sides of the coil spring it is not a valid teaching reference for the first gear having a cylindrical portion.

It is not clear what the Applicant is attempting to argue. Yeh teaches all of the structural limitations of the regulating means as claimed in claim 23. As noted above, Yeh

teaches a gear (3) having a cylindrical portion (4, created by groove (42) formed on one side thereof and regulating means comprising an elastic member (5) having first and second surfaces (end in the gear and end on the washer), the elastic member being disposed directly around the first gear shaft (11) with the first side thereof directly facing the fixed gear (3), a plane washer (7) disposed directly around the first gear shaft (11), the plane washer (7) having a first side with an inner surface portion directly facing a second surface (end contacting plane washer) of the elastic member (5), an outer surface portion (outside of spring 5) disposed radially outward with respect to the inner surface portion and directly facing the end of the cylinder portion (4), wherein the regulating means is adapted to regulate an increase of a bending amount of the elastic member by a predetermined value (comes in contact with the plane washer to regulate) and when the elastic member is in a compressed state, only the outer surface portion is able to contact the ends of the cylinder portion (when compressed the spring expands radially therefore only the outer surface of the spring will contact the cylindrical portion) for the purpose of providing an impact absorbing device in a gear transmission system (paragraph 0004).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Pilkington whose telephone number is (571) 272-5052. The examiner can normally be reached on Monday-Friday 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/J. P./  
Examiner, Art Unit 3682  
6/5/08

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3682